

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1 – 4 (Cancelled).

5. (Currently Amended) ~~The method of claim 4 wherein the step of determining the frequency response of the conditioned channel comprises:~~A method for training branch-specific prefilters in a receiver having at least two input branches, the input branches receiving branch-specific signals transmitted across communications channels, each branch-specific signal containing data from a target transmitter and possibly also interference, the method comprising:

determining a conditioned channel as a linear predictive filter of a residual error between (i) an original signal before transmission across the communications channels; and (ii) a composite signal that combines the branch-specific received signals after transmission across the communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collectively comprise an optimum space-time linear equalizer

determining a plurality of frequency responses of the communications channels from the transmitters to the input branches;

computing a frequency-dependent signal-to-noise-plus-interference ratio (SNIR) from the plurality of frequency responses of the communications channels;

inverse transforming a function of the frequency-dependent SNIR to obtain an autocorrelation function;

computing an impulse response of the conditioned channel from the autocorrelation function;~~and~~

transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel; and

computing frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel.

6. (Original) The method of claim 5 wherein the step of computing a frequency-dependent SNIR from the frequency responses of the communications channels comprises:

calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and
computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches.

7 – 8 (Cancelled).

9. (Currently Amended) The method of claim 45 wherein the step of determining the frequency response of the conditioned channel is non-iterative.

10. (Currently Amended) The method of claim 45 wherein a delay spread of the conditioned channel is one symbol duration.

11. (Currently Amended) The method of claim 45 wherein the conditioned channel has a delay spread that is shorter than a delay spread of the effective communications channels from the target transmitter to the input branches.

12. (Currently Amended) The method of claim 45 further comprising:
receiving the branch-specific signals transmitted across the communications channels;

applying the branch-specific prefilters to the received, branch-specific signals;
and

combining the prefiltered, branch-specific signals to generate a composite,
prefiltered signal; and

processing the composite, prefiltered signal to estimate the data from the target
transmitter.

13. (Original) The method of claim 12 wherein the step of processing the composite,
prefiltered signal comprises:

processing the composite, prefiltered signal according to maximum likelihood
sequence estimation.

14. (Original) The method of claim 12 wherein the step of processing the composite,
prefiltered signal comprises:

determining a confidence level of the estimate of the data.

15. (Original) The method of claim 14 further comprising:

decoding the estimate of the data, based in part on the confidence level of the
estimate.

16. (Cancelled).

17. (Currently Amended) The method of claim 45 wherein the data is transmitted in
packets across the communications channels.

18. (Currently Amended) The method of claim 45 wherein the communications
channels are wireless.

19. (Original) The method of claim 18 wherein the interference is generated by
transmitters that are located in geographically separated cells from the target transmitter
but use a same radio frequency as the target transmitter.

20 – 23 (Cancelled).

24. (Currently Amended) The receiver of claim 23 wherein the first module comprises: A receiver for receiving at least two branch-specific signals transmitted across communications channels, each branch-specific signal containing data from a target transmitter and possibly also interference, the receiver comprising:

a training module comprising:

a first module for determining a conditioned channel as a linear predictive filter of a residual error between (i) an original signal before transmission across the communications channels; and (ii) a composite signal that combines the branch-specific received signals after transmission across the communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collectively comprise an optimum space-time linear equalizer, said first module comprising:

a module for determining a plurality of frequency responses of the communications channels from the transmitters to the input branches;

a first computational module for computing a frequency-dependent signal-to-noise-plus-interference ratio (SNIR) from the plurality of frequency responses of the communications channels;

an inverse FFT for inverse transforming a function of the frequency-dependent SNIR to obtain an autocorrelation function;

a second computational module for computing an impulse response of the conditioned channel from the autocorrelation function; and

a second FFT for transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel
a second module for computing frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel; and
prefilter modules coupled to the training module for applying the branch-specific prefilters to the branch-specific received signals.

25. (Original) The receiver of claim 24 wherein the first computational module comprises:

- a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and
- a computational module for computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches.

26 - 27. (Cancelled).

28. (Currently Amended) The receiver of claim 2024 wherein the first module determines the frequency response of the conditioned channel in a non-iterative manner.

29. (Currently Amended) The receiver of claim 2024 wherein a delay spread of the conditioned channel is one symbol duration.

30. (Currently Amended) The receiver of claim 2024 wherein the conditioned channel has a delay spread that is shorter than a delay spread of the effective communications channels from the target transmitter to the input branches.

31. (Currently Amended) The receiver of claim 2024 further comprising:
a sequence estimator coupled to the prefilter modules for combining the
prefiltered, branch-specific signals to generate a composite, prefiltered
signal; and further for processing the composite, prefiltered signal to
estimate the data from the target transmitter.
32. (Original) The receiver of claim 31 wherein the sequence estimator comprises a
maximum likelihood sequence estimator.
33. (Original) The receiver of claim 31 wherein the sequence estimator determines a
confidence level of the estimate of the data.
34. (Original) The receiver of claim 33 further comprising:
a decoder coupled to the sequence estimator for decoding the estimate of the
data, based in part on the confidence level of the estimate.
35. (Cancelled).
36. (Currently Amended) The receiver of claim 2024 further comprising:
a front-end with at least two input branches.
37. (Currently Amended) The receiver of claim 2024 wherein the data is transmitted in
packets across the communications channel.
38. (Currently Amended) The receiver of claim 2024 wherein the training module is
adapted for a wireless communications channel.
39. (Currently Amended) The receiver of claim 2024 wherein the training module and
the prefilter module are implemented as circuitry on a single integrated circuit.